

REMARKS

The above amendments and these remarks are submitted in reply to the Office Action dated July 2, 2003. By this Amendment, the specification has been amended to correct minor typographical and grammatical errors present therein, and to make the disclosure coincide with the originally filed drawings. The Applicant submits that no new matter has been added by such amendments.

Objections to Claims 1 and 12

Claims 1 and 12 have been objected to by the Examiner for including improper reference numbers. By this Amendment, the Applicant has corrected the aforementioned minor informality. Accordingly, reconsideration of the objection to Claims 1 and 12 is respectfully requested.

Rejection of Claims 2-3

The Examiner has rejected Claims 2 and 3 under 35 U.S.C. §112, 2nd paragraph as being indefinite. By this Amendment, the Applicant has amended such claims to further define how firmware and software fit within the context of the present invention and accompanying disclosure. Accordingly, reconsideration of the rejection of Claims 2 and 3 is respectfully requested.

Rejection of Claims 1-5 and 9-11

The Examiner has rejected Claims 1-5 and 9-11 under 35 U.S.C. §102(b) as being anticipated by Scheive, et al. (U.S. Patent No. 5,398,333). The Applicant traverses such rejection for the reasons set forth in greater detail below.

The present invention is directed to a system and method of using available nonvolatile random access or flash memory space as a diagnostic drive for a computer system. By implementing the novel methodology of the present invention, additional resources, for example, using additional system resources such as a system RAM, ROM or other suitable memory resources do not have to be used to provide a storage location and execution point for software, such as diagnostic programs. An exemplary method for

implementing the aforementioned functionality is defined in Claim 1, which includes the following limitations:

“...modifying the Extensible Firmware Interface to include an EFI driver that operates to configure available nonvolatile random access memory space normally reserved for the BIOS as a diagnostic disk drive...”

“...when the computer system is initialized, configuring the available space in the flash memory that is not allocated to the firmware as a diagnostic disk drive...” and

“...loading one or more diagnostic programs into the diagnostic drive...”

As such, the instant invention uses existing memory in a manner not heretofore disclosed or used in the art. More specifically, the instant invention uses the otherwise non-used portion of nonvolatile flash memory as a diagnostic disk drive where, for example, diagnostic or other suitable programs are maintained and executed when the larger system for which the nonvolatile memory forms a part is not functioning properly or when diagnostic operations need to be performed. The Schieve, et al. reference does not disclose or otherwise teach or suggest such functionality. Consequently, Schieve, et al. does not anticipate the invention as suggested by the Examiner.

As understood, Schieve, et al. is directed to and discloses “...a method of loading diagnostic routines in a computer system...” (See, for example, col. 7, lines 19-20). As clearly disclosed, for example, on col. 5, lines 58-62 and col. 6, lines 18-20, the diagnostic routines are decompressed and then transferred and subsequently stored in a separate video RAM for further execution. Thus, Schieve, et al. does not disclose “...loading one or more diagnostic programs into the diagnostic drive...” as recited in Claim 1 as the diagnostic programs of Schieve, et al. are stored in a separate memory (e.g. RAM- see, col. 6, lines 18-20). Thus, at least this limitation of Claim 1 is not disclosed in Schieve, et al. contrary to the assertion of the Examiner.

Moreover, Schieve, et al. does not disclose or otherwise teach or suggest the step of “...configure available nonvolatile random access memory space normally used for the BIOS as a diagnostic disk drive..” as defined in Claim 1 for use as a location to maintain the diagnostic programs as the “...boot loading routine decompresses a first diagnostic routine from the flash ROM into video RAM...” for execution (See, for example, col. 5,

lines 58-60). Thus, Schieve, et al. discloses that the diagnostic programs, which are maintained in a compressed state in ROM, are transferred to RAM for execution; not loaded and subsequently executed from the diagnostic disk drive portion of the flash memory or space normally reserved for the BIOS as defined in Claim 1. Accordingly, at least this limitation of Claim 1 is not disclosed in Schieve, et al. contrary to the assertion of the Examiner.

Additionally, as the methodology of Schieve, et al. calls for the first diagnostic, and presumably, additional programs being decompressed and transferred to RAM for execution, Schieve, et al. does not disclose or otherwise teach or suggest "...when the computer system is initialized, configuring the available space in the flash memory that is not allocated to the firmware as a diagnostic disk drive..." as recited in Claim 1 as such configuring is not required in the multi-memory use system disclosed in Schieve, et al. Thus, at least this limitation of Claim 1 is not disclosed in Schieve, et al. contrary to the assertions of the Examiner.

Consequently, as none of the aforementioned limitations of Claim 1 is disclosed or otherwise taught or suggested by Schieve, et al., the Applicant submits that Schieve, et al. does not anticipate the invention as defined in Claim 1. Accordingly, reconsideration of the rejection of Claim 1 is respectfully requested.

Claims 2-5 directly or indirectly depend upon and include all the limitations of Claim 1 and are allowable at least for the reasons set forth above with respect to Claim 1. Accordingly, reconsideration of the rejection of Claims 1-5 is respectfully requested.

Claim 9 is directed to a computer apparatus, including a limitation directed to an EFI driver that:

"...operates to configure available flash read-only memory space normally reserved for the BIOS as a diagnostic disk drive..." and

"...load one or more diagnostic programs into the diagnostic drive..."

Thus, Claim 9 defines a computer system including a flash memory, where the flash memory is configured, for example, to store the BIOS code of the system with the remainder of the memory being used as a diagnostic drive to maintain and act as an execution point for diagnostic programs. In this manner, additional memory resources,

for example, separate random access memory or other suitable memory are not required to execute diagnostic programs. Such a system is in direct contrast to the system disclosed in Schieve, et al. which requires a separate memory (e.g. video RAM) to execute the corresponding diagnostic programs (see, for example, col. 5, lines 58-60 and col. 6, lines 18-20). Thus, as Schieve, et al. does not disclose a system including the aforementioned limitation, and in fact, discloses a system that is in direct contrast to the claimed system, the Applicant submits that Schieve, et al. does not anticipate the invention as defined in Claim 9. Accordingly, reconsideration of the rejection of Claim 9 is respectfully requested.

Claims 10-11 depend upon and include all the limitations of Claim 9 and are allowable at least for the reasons set forth above with respect to Claim 9. Accordingly, reconsideration of the rejection of Claims 9-11 is respectfully requested.

Rejection of Claims 6 and 12

The Examiner has rejected Claims 6 and 12 under 35 U.S.C. §103(a) as being unpatentable over Scheive, et al. in view of Davis (U.S. Patent No. 5,844,986). The Applicant traverses such rejection for the reasons set forth in greater detail below.

Claim 6 depends upon and includes the limitations of Claim 1 and is submitted to be allowable at least for the reasons set forth above with respect to Claim 1. Further, the teachings of Davis do not overcome the aforementioned shortcomings of Schieve, et al. as Davis does not disclose or otherwise teach or suggest, for example:

“...configure available nonvolatile random access memory space normally reserved for the BIOS as a diagnostic drive...”

“...when the computer system is initialized, configuring the available space in the flash memory that is not allocated to the firmware as a diagnostic disk drive...” and

“...loading one or more diagnostic programs into the diagnostic disk drive...”

as defined in Claim 1, as Davis does not disclose the aforementioned functionality. Accordingly, reconsideration of the rejection of Claim 6 is respectfully requested.

Claim 12 depends upon and includes the limitations of Claim 9 and is submitted to be allowable at least for the reasons set forth above with respect to Claim 9. Further, the teachings of Davis do not overcome the aforementioned shortcomings of Schieve, et al. as Davis does not disclose, for example:

“...configure available flash read-only memory space normally reserved for the BIOS as a diagnostic disk drive...” and

“...load one or more diagnostic programs into the diagnostic disk drive...”

as defined in Claim 1, as Davis does not disclose the aforementioned limitations.

Accordingly, reconsideration of the rejection of Claim 12 is respectfully requested.

Rejection of Claims 7-8 and 13-14

The Examiner has rejected Claims 7-8 and 13-14 under 35 U.S.C. §103(a) as being unpatentable over Scheive, et al. in view of Treu (U.S. Patent No. 5,245,615). The Applicant traverses such rejection for the reasons set forth in greater detail below.

Claim 7-8 directly or indirectly depend upon and include all the limitations of Claim 1 and are allowable at least for the reasons set forth above with respect to Claim 1. Further, the teachings of Treu do not overcome the aforementioned shortcomings of Schieve, et al. as Treu does not disclose, teach or suggest:

“...modifying the Extensible Firmware Interface to include an EFI driver that operates to configure available nonvolatile random access memory space normally reserved for the BIOS as a diagnostic disk drive...” and

“...loading one or more diagnostic programs into the diagnostic disk drive...”

as defined in Claim 1. In fact, Treu specifically discloses that the NVRAM includes an error log maintained therein; diagnostic programs communicate with but are not present in the NVRAM (See, for example, FIG. 3; col. 4, line 66-col. 5, line 4 and col. 3, lines 1-3 “...ROM 38 stores a POST program 40 and a BIOS 42...”). Thus, contrary to the Examiner’s assertion, the structure and operation of the system disclosed in Treu is different (and not analogous) from the apparatus defined in Claim 1. More specifically, the combination of Schieve, et al. and Treu does not teach or suggest “...diagnostic disk

drive space is used to store power on self test (POST) error logs in files..." as defined in Claim 7.

Further, as neither Schieve, et al. nor Treu teach or suggest the aforementioned limitations, the combination of Schieve, et al. and Treu also does not teach or suggest the limitations defined in Claim 8.

Moreover, Treu at col. 8, lines 3-21 discloses the process undertaken when the disclosed system recovers from an error condition. As stated, for example, at col. 8, lines 12-18:

"...If the error is not a critical error such that further operations can be continued perhaps in a degraded fashion, step 244 completes the POST and then loads or boots the OS in normal fashion...If step 242 determines the error is critical, then step 246 informs the user of such error if it is at all possible..."

Thus, given the above operational description, Treu also does not teach or suggest "...running the one or more diagnostic programs to correct the problem with the computer system..." as defined in Claim 1, which is incorporated in its entirety into Claims 7-8. Accordingly, reconsideration of the rejection of Claims 7-8 is respectfully requested.

Claims 13-14 directly or indirectly depend upon and include all the limitations of Claim 9 and are submitted to be allowable for the reasons set forth above with respect to Claim 9. More specifically, Claim 9, like Claim 1 above, includes limitations directed to:

"...configure available flash read-only-memory space normally reserved for the BIOS as a diagnostic disk drive, load one or more diagnostic programs into the diagnostic disk drive..." and

"...run the one or more diagnostic programs to correct the problem with the hard disk drive..."

As discussed in greater detail above, the combination of Schieve, et al. and Treu does not teach or suggest such combination of limitations. Consequently, the combination of Schieve, et al. and Treu does not render the invention as defined in Claim 9 obvious. Accordingly, reconsideration of the rejection of Claims 13-14 is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is respectfully submitted that Claims 1-14 are now in proper condition for allowance and such action is earnestly solicited.

The Commissioner is hereby authorized to charge any underpayments or credit any over payments to Deposit Account No. 16-1520 for any payment in connection with this communication, including any fees for extension of time, which may be required. The Examiner is invited to call the undersigned if such action might expedite the prosecution of this application.

Respectfully submitted,
PHOENIX TECHNOLOGIES LTD.

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By: 

Loren H. McRoss
Registration No. 40,427

915 Murphy Ranch Road
Milpitas, CA 95035
PH: (408) 570-1000 ¹⁶⁵⁰
FX: (408) 570-1044